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MEMORANDUM

To: Peter M. Lake, Chairman, Public Utility Commission of Texas
Lori Cobos, Commissioner, Public Utility Commission of Texas
Jimmy Glotfelty, Commissioner, Public Utility Commission of Texas
Will McAdams, Commissioner, Public Utility Commission of Texas

From: Woody Rickerson, Vice President of Grid Planning and Operations

Date: September 21, 2021

Re: PUCT Project No. 51617, Calendar Year 2021 – Open Meeting Agenda Items without an Associated Control Number

Requested ERCOT Transmission Planning Information

At Commissioner Cobos' request, I am submitting the attached presentation that addresses the three following issues discussed at the Public Utility Commission's September 2, 2021 meeting:

- an overview of reliability needs and options for improving transmission service to the Lower Rio Grande Valley for reliability purposes,
- an overview and recommendation for the load forecast "boundary threshold" used by ERCOT in transmission planning, and
- an update on ERCOT's ability to implement the new consumer benefits test required by SB1281.

Requested ERCOT Transmission Planning Information

September 20, 2021

Transmission Planning Criteria

- Transmission projects are evaluated based on reliability need and economic benefit.
  - **Reliability Projects**
    - Projects that are required to reliably serve customer electricity demand (as per NERC standards and ERCOT protocols).
    - These projects are evaluated based on effectiveness and estimated cost.
  - **Economic Projects**
    - ERCOT currently evaluates projects based on production cost savings (fuel costs and other variable costs) as per Subst. Rule 25.101.
    - If expected annual production cost savings resulting from a project are greater than the incremental annual revenue requirements charged to consumers, the project meets the economic criteria.

- Both criteria reflect a future need for additional transmission capacity to deliver power from the generators to customers.
  - Reliability projects resolve situations where there are no possible generation alternatives to reliably serve load.
  - Economic projects resolve situations where there are possible generation solutions, but only from higher-cost generation units.

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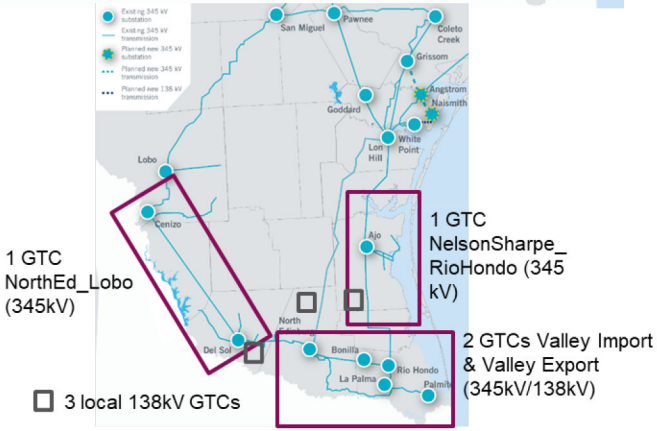
Overview of Reliability Needs and Options for Improving Transmission Service to the Lower Rio Grande Valley (LRGV)

Lower Rio Grande Valley (LRGV)

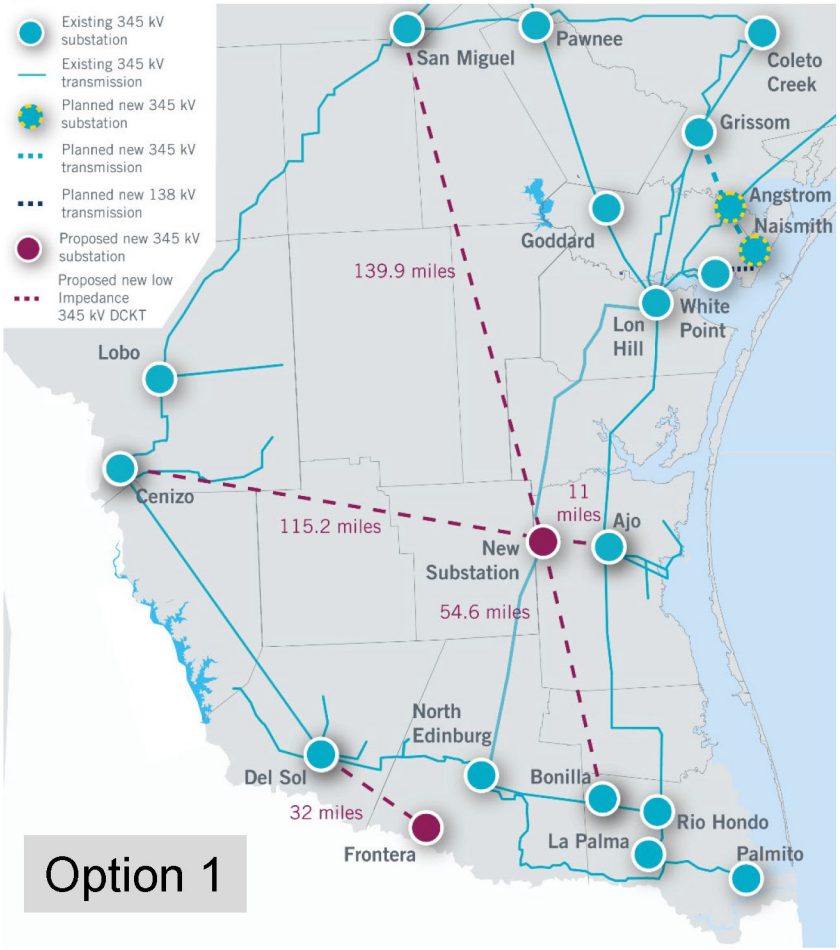
- The majority of LRGV customer electricity demand is in the Cameron, Hidalgo, Starr, and Willacy counties. The summer peak demand in LRGV is projected to reach 3,200 MW and 3,300 MW by 2026 and 2030, respectively.
- Using established planning reliability criteria, the existing system with no outages can reliably serve summer peak demand in LRGV up to 3,200 MW. System improvements are required by 2027.
- Currently, LRGV is primarily connected to the rest of the ERCOT grid through three 345-kV long-distance transmission circuits.
- This area is susceptible to tropical storm and hurricane related outages.
- There is limited existing conventional generation capacity and no planned conventional generation in LRGV at this time.
- This area has seen significant growth of renewable generation. The cumulative wind and solar generation capacity is expected to reach ~7 GW by end of 2021 in and near the LRGV.
- Seven of the 16 existing Generic Transmission Constraints (GTCs) used to maintain grid stability are in the LRGV area.

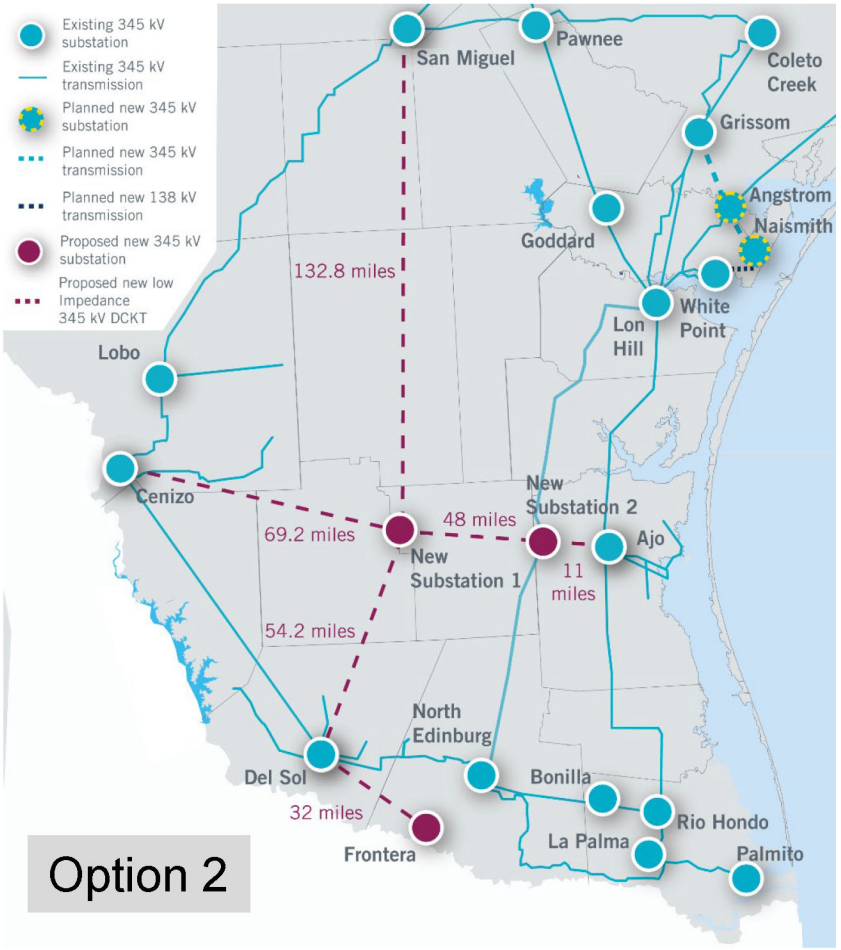


Long-Term System Improvements to LRGV

- Two long-term system improvement options for LRGV were developed to:
  - Improve reliability by increasing load serving capability in the LRGV area (projected customer electricity demand growth and potential industrial load additions)
  - Improve stability constraints (both import and export constraints)
  - Improve system resilience under normal conditions (all components are in service) and other conditions, such as generation outages, transmission outages, and the intermittence of renewable generation
  - Improve system resilience under extreme weather conditions including hurricanes and tropical storms

Two Long-Term System Improvement Options





(1). New circuit distance was estimated as 120% of point-to-point distance.
(2). Both Option 1 and 2 are estimated to improve the LRGV customer electricity demand serving capability up to year 2040 assuming 2% annual load growth in LRGV (LRGV load forecast by 2030 and 2040 are 3.3 GW and 4 GW, respectively)

Comparison of Long-Term System Improvement Options

Items	System Improvement	
	Option 1	Option 2
Estimated new 345-kV right-of-way (miles)	357	351
Estimated cost ($Billion)(1)	$1.34	$1.28
LRGV load serving capability (BAU)	> 2040(2)	> 2040(2)
Improve system resilience and operational flexibility	Yes	Yes
Improve stability constraints	Yes	Yes, Better(3)
Reduce SSR vulnerability	Yes	Yes, Better(3)
Reduce the impact of hurricane	Yes	Yes, Better(4)
Future load and generation integration	Yes	Yes

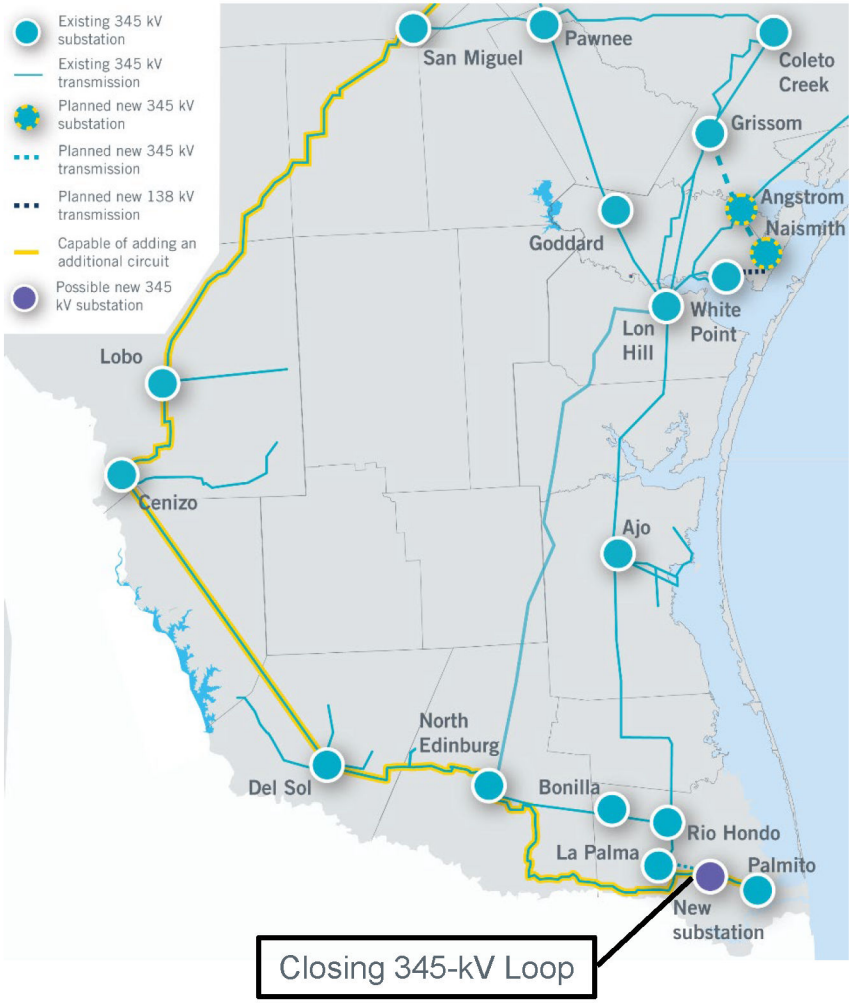
(1). Based on the estimates provided by TSPs and may be revised with further updated information from TSPs if applicable
(2). Both Option 1 and 2 are estimated to improve the LRGV load serving capability up to 2040 assuming 2% annual load growth in LRGV (LRGV load forecast by 2030 and 2040 are 3.3 GW and 4 GW, respectively)
(3). Option 2 provides one more new circuit that would be connected to the existing Lobo-North Edinburg 345-kV line, as compared to Option 1
(4). Option 2 is further away from coastal area, as compared to Option 1

Long-Term System Improvement Recommendation

- Option 2 is the preferred option based on the following considerations:
  - Provide reliable long-term infrastructure in LRGV for future customer electricity demand growth and generation development
  - Improve reliability by increasing load serving capability in LRGV
  - Provide the framework for future system improvements
  - Improve system resilience, including extreme weather (hurricanes and tropical storms) and generation/transmission outages
  - Improve stability constraints in LRGV
  - Minimize the construction impact to the existing system
  - Superior to Option 1 from an Outage Coordination standpoint
  - Anticipate completion by 2027
  - Estimated cost: ~$1.28 billion
  - Estimated new right of way: 351 miles
- This is a Tier 1 RPG project, and a CCN is required.
- ERCOT presented this long-term system option to RPG on Sept. 15, 2021 for RPG review and requested that stakeholders provide comments by Oct. 6, 2021.
- ERCOT plans to seek TAC review and BOD endorsement by end of this year.

Additional System Improvement Options Requiring Limited or No New Right-Of-Way

- In addition to the two long-term options, other potential options requiring limited or no new right-of-way were also evaluated.
  - Option A: Closing 345-kV loop in LRGV: add ~7 miles of 345-kV line from La Palma to a new tap location on the existing 345-kV line from North Edinburg to Palmito
  - Option B: Add 294 miles of 2nd circuit to the existing 345-kV transmission lines from San Miguel – Lobo - North Edinburg - Palmito
- The combination of both options with no outages is estimated to increase reliability by improving load serving capability in LRGV from 2027 to 2033 (pushing back the reliability need for transmission improvements for ~6 years).
- Outages of the existing circuit(s) may be required to add the second circuit. These potential outages may present an operational reliability risk in LRGV.



Overview and Recommendation for the Load Forecast Boundary Threshold Used by ERCOT in Transmission Planning

Boundary Threshold Overview

- The boundary threshold process to determine forecasted peak demand is only applicable to reliability transmission projects.
- In the current Regional Transmission Plan, the customer electricity demand forecasts for six of the eight weather zones were limited by the boundary threshold.
- It is difficult to specifically define the impact of the boundary threshold on transmission planning outcomes.
  - The limit is imposed across all substations in a weather zone, yet transmission needs are often local in nature.
  - For weather zones that include multiple TSPs, the higher customer electricity demand growth forecasts of some TSPs can result in limits to the customer electricity demand forecasts of other TSPs.
  - The existence of the boundary threshold may affect the TSP load forecasting processes, reducing TSP customer electricity growth forecasts before they are even submitted to ERCOT for review.

Boundary Threshold Recommendation

- Increasing the boundary threshold provides the TSPs more flexibility to account for the reliability needs of fast-growing areas on their systems.
  - Such a change appears increasingly needed as areas of Texas experience significant population and economic growth and as increasing numbers of large commercial and industrial consumers (such as new data centers) propose new facilities with accelerated development timelines.
- Increasing the boundary threshold to 7.5% would be a reasonable initial step to better account for the changing needs of the grid.

Update on ERCOT's Ability to Implement the New Consumer Benefits Test Required by SB1281

Implementation

- SB1281 (87R) amended PURA Section 37.056 to require consideration of "estimated congestion cost savings for consumers" for economic-driven transmission projects requiring a CCN.

- Based on further internal review, ERCOT has determined it must update its economic planning models and software prior to implementing the new consumer benefits test required by SB1281.
  - ERCOT has begun the update process as there are certain variables that must be included in any consumer benefits test.
  - ERCOT will complete the update process once it receives policy guidance from the Commission.